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(56) Documents Cited

GB 2264225 A

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DE 004229030 A1

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(54) Abstract Title

**Vacuum cleaner with brush regulator**

(57) The brush roller (11) is driven by way of a belt drive (10) by an air fan (15), which is provided in a fan chamber (14) of the casing (2). Provided between the brush chamber (3) and the fan chamber (14) is a guide nozzle (7) for guiding the intake air stream (S) acting upon the air fan (15). In order to reduce the drive power when the vacuum-cleaning tool (1) is lifted from the floor, the guide nozzle (7) is tiltably mounted in the casing (2) of the vacuum-cleaning tool (1). In a first tilted position - the operating position - in order to achieve a high drive power, the intake air stream (S) is directed towards the air fan (15), and in a second tilted position - the inoperative position - in order to achieve a low idling speed, the intake air stream (S) is directed substantially radially towards the fan (15).

Fig. 1

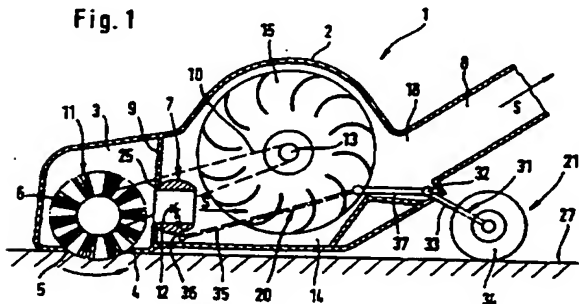
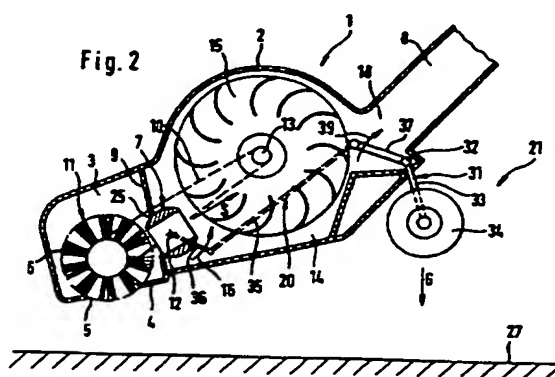


Fig. 2



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Fig. 1

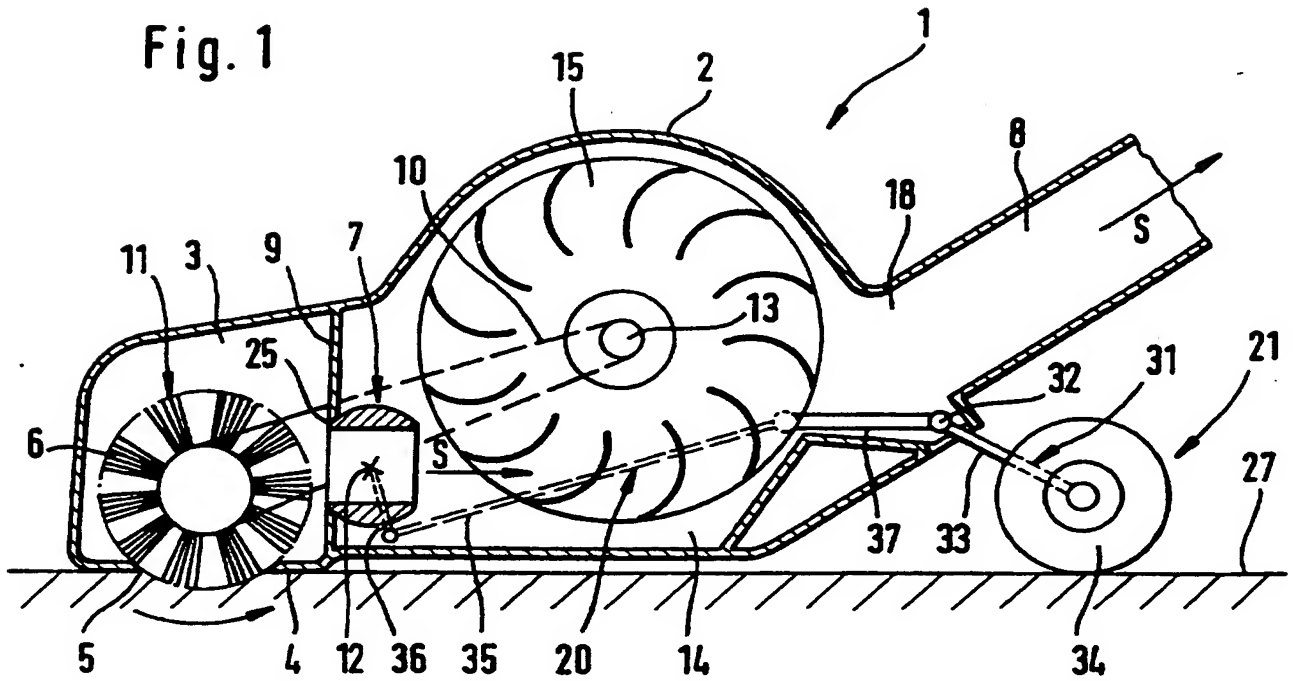
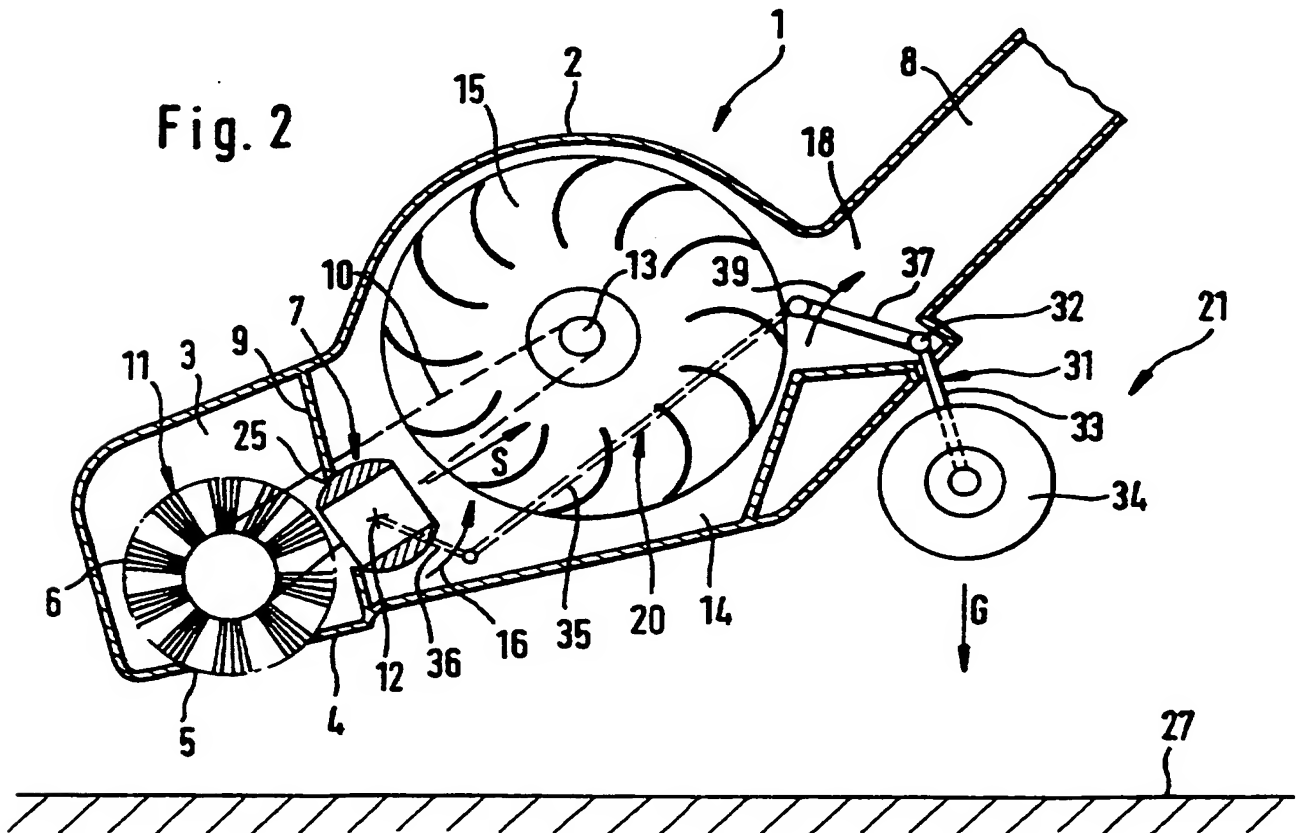
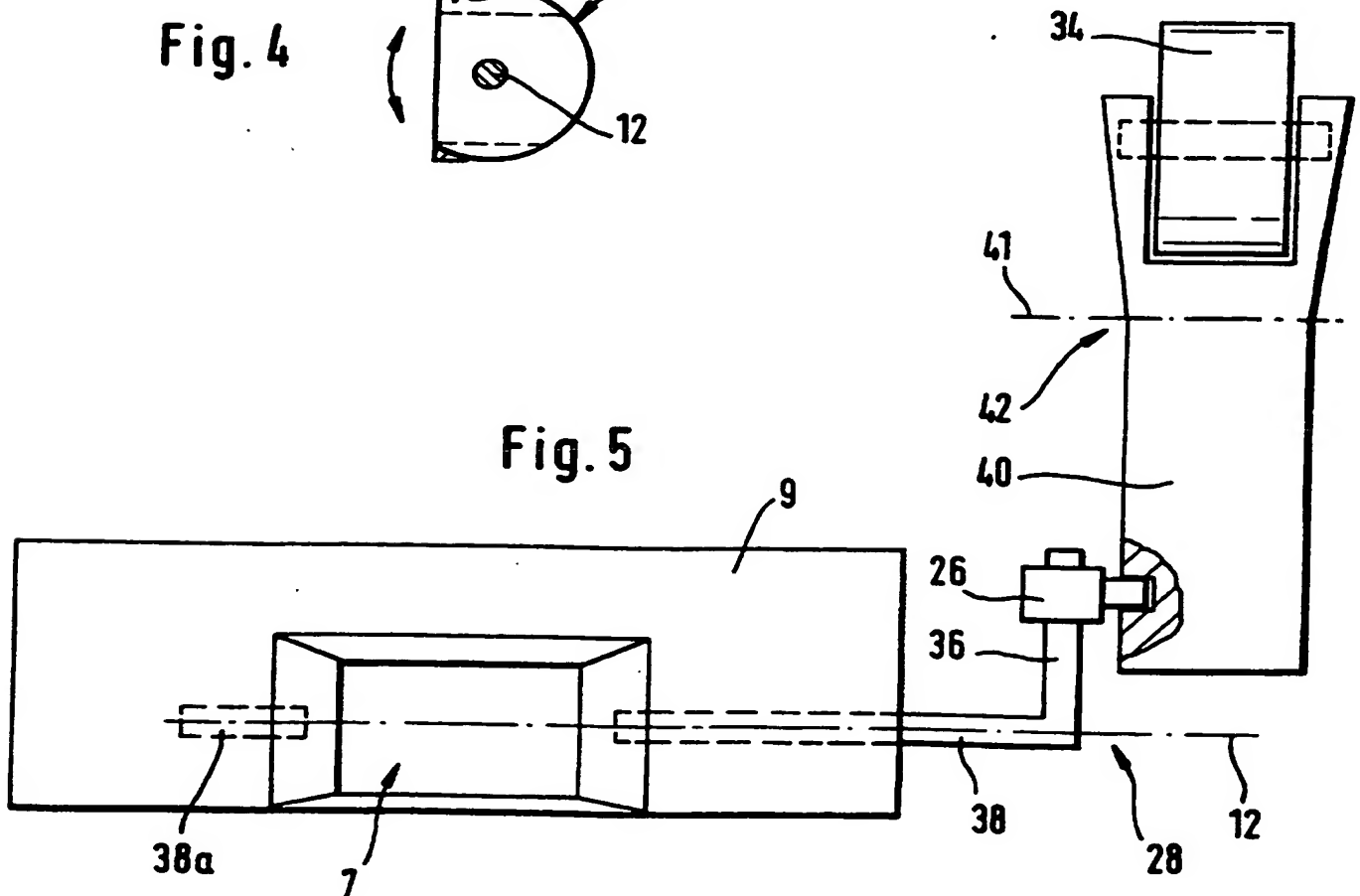
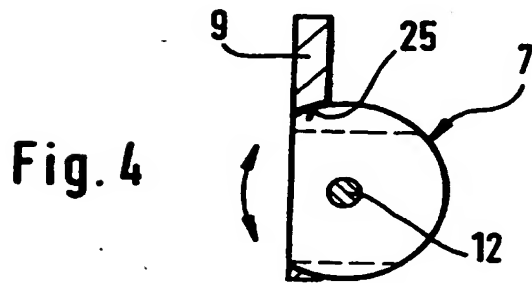
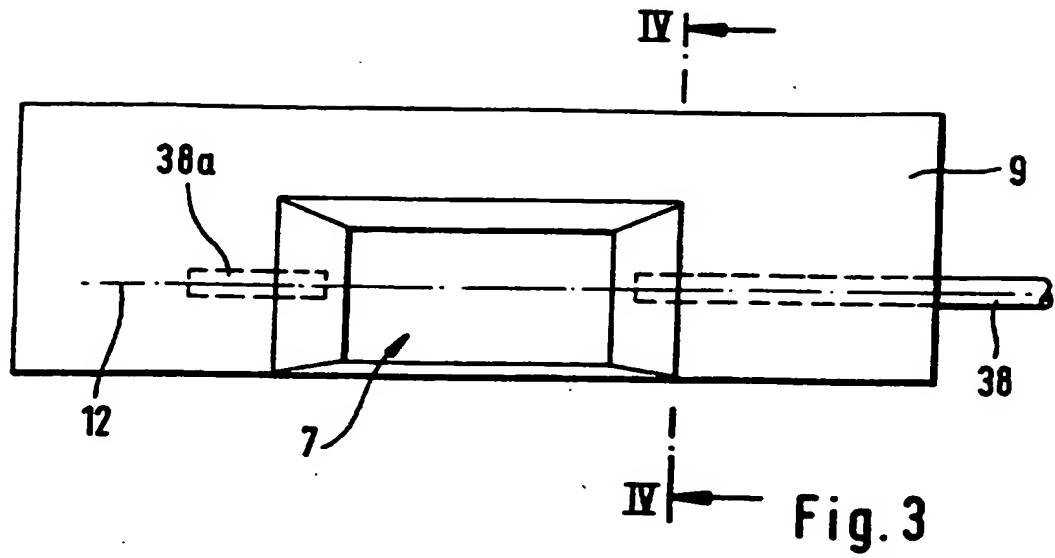


Fig. 2





The invention relates to a vacuum-cleaning tool for connection to the suction tube of a vacuum-cleaner according to the preamble of Claim 1.

5 A vacuum-cleaning tool of this type is known from DE 42 29 030 A1. For the mechanical cleaning of a textile floor-covering, a brush roller is located in the casing of the vacuum-cleaning tool, which roller projects by its bristles through a suction  
10 air fan, which is acted upon by the intake air stream. The air fan in this case makes an adequate driving power available in order, even on a long-pile floor-covering, to guarantee a powerful rotation of the brush roller and thus satisfactory cleaning.

15 If the vacuum-cleaning tool is raised from the floor surface to be cleaned, there is a risk that the user may put his hand into the rotating brush roller, which under unfavourable circumstances may lead to injuries. Therefore it is provided,  
20 when the vacuum-cleaning tool is raised from the floor, to slow-down or stop the drive for the brush roller. Thus, at the time of lifting from the floor, a secondary air opening can be opened, due to which the intake air stream directed by the guide nozzle onto the air fan is reduced. At the time of operation,  
25 an air-tight closure of the secondary air opening must be ensured, in order that the operating efficiency of the brush roller does not drop in an uncontrolled manner due to uncontrolled secondary air streams.

30 If, in order to reduce the output of the fan when the vacuum-cleaning tool is not operating, the connection socket is closed by a flap, the driving intake air stream is interrupted; however, in this case, a considerable increase in the noise of the vacuum-cleaner must be tolerated. When the vacuum-cleaner  
35 is operating, the forces necessary for opening the flap are considerable on account of the high vacuum, so that an arrangement of this type must be constructed so that it can be

subjected to high mechanical loads.

It is the object of the invention, in a vacuum-cleaning tool of the aforementioned general type, to reduce the drive power of the fan with simple means, when the vacuum-cleaning tool is lifted from the floor.

The object is achieved according to the invention in accordance with the characterising features of Claim 1.

The forces necessary for adjusting the guide nozzle are low; the cross-section of the flow path itself is not changed. The other incident flow on the air fan, which is adopted in the inoperative position of the vacuum-cleaning tool, leads directly to the desired reduction in power, so that the risk of injury by the brush roller is reduced. In addition it has proved that due to the changed, substantially radial incident flow on the fan, the idling speed is reduced by approximately 50%, due to which the development of noise in the vacuum-cleaning tool according to the invention is also clearly reduced in the inoperative position.

Preferably, in the first tilted position of the guide nozzle - which corresponds to the operating position - the incident flow on the air fan is essentially tangential and in the second tilted position of the guide nozzle - which corresponds to the inoperative position - the incident flow is essentially radial.

Preferably the guide nozzle may be displaced about a tilting axis lying parallel to the axis of rotation of the air fan, in which case it is mounted so that it is able to tilt in particular in the manner of a spherical segment, in the dividing wall between the brush chamber and the fan chamber.

Further features of the invention will become apparent from the other Claims, the Description and the drawings, in which one embodiment of the invention, described in detail hereafter, is

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Claims

1. Vacuum-cleaning tool with a casing (2), which comprises a connection socket (8) for the suction tube of a vacuum-cleaning tool, with a brush roller (11) located in a brush chamber (3) of the casing (2), the bristles (6) of which project through a suction slot (5) formed in the base plate (4) of the casing (2), with an air fan (15) driving the brush roller (11) in rotation and comprising vanes, which fan is provided in a fan chamber (14) of the casing (2), and with a tiltable guide nozzle (7), located between the brush chamber (3) and the fan chamber (14), for the intake air stream (S) acting on the air fan (15), in which case in a first tilted position - the operating position - in order to achieve a high drive power, the intake air stream (S) is directed substantially tangentially towards the air fan (15), characterised in that in a second tilted position - the inoperative position - the guide nozzle (7) changes the direction of the intake air stream (S) towards the centre of the air fan (15) and there is a substantially radial flow towards the vanes of the air fan (15).
2. Vacuum-cleaning tool according to Claim 1, characterised in that the air nozzle (7) is adjustable about a tilting axis (12) lying parallel to the axis of rotation (13) of the air fan (15).
3. Vacuum-cleaning tool according to Claim 1 or 2, characterised in that the guide nozzle (7) is retained in the manner of a segment so that it is able to tilt in the dividing wall between the brush chamber (3) and the fan chamber (14).
4. Vacuum-cleaning tool according to one of Claims 1 to 3, characterised in that the guide nozzle (7) can be adjusted by

way of an actuating member (21) located outside the casing (2).

5. Vacuum-cleaning tool according to Claim 4, characterised in that the actuating member (21) is a feeler member (34) resting in the operating position on the floor (27) to be cleaned.

6. Vacuum-cleaning tool according to Claim 5, characterised in that the feeler member is a feeler roller (34) supporting the casing (2) on the floor (27).

7. Vacuum-cleaning tool according to Claim 5 or 6, characterised in that the actuating member (21) is able to tilt about a bearing (32) integral with the casing and adjusts the guide nozzle (7) by way of a lever arrangement (20).

8. A vacuum-cleaning tool substantially as hereinbefore described with reference to, and as illustrated in, the accompanying drawings.



Application No: GB 9803171.9  
Claims searched: 1-8

Examiner: Jeremy Philpott  
Date of search: 17 June 1998

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.P): A4F [FCCB, FSCB, FSNB, FSND, FSNF, FSNX]

Int Cl (Ed.6): A47L: 9/00, 9/04

Other: On-line: WPI, Patents Citation Index

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
A	GB 2264225 A (Peter Wörwag) whole document & Figures	
A	GB 2252900 A (Peter Wörwag) whole document & Figures	
A	DE 4229030 A1 (Peter Wörwag) whole document & Figures	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.